

This document gives pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a Minor, Municipal permit. The discharge results from the operation of a 0.015 MGD wastewater treatment plant. This permit action consists of updating the WQS and updating boilerplate. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260-00 et seq.

1. Facility Name and Mailing Address: Boston Water and Sewer STP
2301 Wyoming Ave, NW
Washington, DC 20008
SIC Code : 4952 WWTP
Facility Location: 1 mile SSW of the intersection of State Routes 522 and 707 County: Culpeper
Facility Contact Name: Edward O'Brien Telephone Number: (202) 207-0232
2. Permit No.: VA0065358 Expiration Date of previous permit: August 31, 2008
Other VPDES Permits associated with this facility: VA0088749 (New facility)
Other Permits associated with this facility: 3014724 Petroleum
E2/E3/E4 Status: NA
3. Owner Name: Boston Water and Sewer
Owner Contact/Title: Edward O'Brien Telephone Number: (202) 207-0232
4. Application Complete Date: 2/27/08
Permit Drafted By: Alison Thompson Date Drafted: 9/22/08
Draft Permit Reviewed By: Joan Crowther Date Reviewed: 9/25/08
Public Comment Period : Start Date: 11/13/08 End Date: 12/15/08
5. Receiving Waters Information: See Attachment 1 for the Flow Frequency Determination
Receiving Stream Name : Hazel River, UT
Drainage Area at Outfall: <5 sq.mi. River Mile: XDH0.08
Stream Basin: Rappahannock Subbasin: Rappahannock
Section: 4 Stream Class: III
Special Standards: none Waterbody ID: VAN-E04R
7Q10 Low Flow: 0.0 MGD 7Q10 High Flow: 0.0 MGD
1Q10 Low Flow: 0.0 MGD 1Q10 High Flow: 0.0 MGD
Harmonic Mean Flow: 0.0 MGD 30Q5 Flow: 0.0 MGD
303(d) Listed: No 30Q10 Flow: 0.0 MGD
TMDL Approved: Yes (downstream) Date TMDL Approved: 1/23/08 by EPA
6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

<input checked="" type="checkbox"/> State Water Control Law	<input type="checkbox"/> EPA Guidelines
<input checked="" type="checkbox"/> Clean Water Act	<input checked="" type="checkbox"/> Water Quality Standards
<input checked="" type="checkbox"/> VPDES Permit Regulation	<input type="checkbox"/> Other
<input checked="" type="checkbox"/> EPA NPDES Regulation	
7. Licensed Operator Requirements: Class IV
8. Reliability Class: Class II

9. Permit Characterization:

<input checked="" type="checkbox"/> Private	<input type="checkbox"/> Effluent Limited	<input type="checkbox"/> Possible Interstate Effect
<input type="checkbox"/> Federal	<input checked="" type="checkbox"/> Water Quality Limited	<input type="checkbox"/> Compliance Schedule Required
<input type="checkbox"/> State	<input checked="" type="checkbox"/> Toxics Monitoring Program Required	<input type="checkbox"/> Interim Limits in Permit
<input type="checkbox"/> POTW	<input type="checkbox"/> Pretreatment Program Required	<input type="checkbox"/> Interim Limits in Other Document
<input checked="" type="checkbox"/> TMDL		

10. Wastewater Sources and Treatment Description:

This 0.015 MGD STP is a package unit using extended aeration activated sludge processes, clarification, disinfection, and discharge through Outfall 001 to a UT of the Hazel River. There is an aerated flow equalization tank preceding the bar screen. The package plant has one aeration basin with diffusers, one ringlace tank, secondary clarification, and an aerobic sludge holding tank. The ringlace unit went online in August 1999 to enhance nitrification. Soda ash is added to the aeration basin for pH and alkalinity adjustment. Effluent from the secondary clarifier is disinfected using ultraviolet radiation. The UV system went online in August 2005. Cascade steps are used for post aeration.

See the application for a facility schematic.

TABLE 1 – Outfall Description

Outfall Number	Discharge Sources	Treatment	Design Flow	Outfall Latitude and Longitude
001	Domestic Wastewater	See Item 10 above.	0.015 MGD	38° 31' 32" N 78° 08' 17" W
See Attachment 2 for the Woodville Quadrangle (197C) topographic map.				

11. Sludge Treatment and Disposal Methods:

The sludge is stored in an aerobic holding tank until it is pumped and hauled to the Remington WWTP (VA0076805) for additional treatment.

12. Discharges, Intakes, Monitoring Stations, Other Items in Vicinity of Discharge

TABLE 2 – Ambient Monitoring Stations

3-HAZ042.43	VADEQ Ambient Water Quality Monitoring Station upstream at Route 600 in Rappahannock County.
3-HAZ032.54	VADEQ Ambient Water Quality Monitoring Station upstream at the Route 644 bridge in Rappahannock County.
3-HAZ018.29	VADEQ Ambient Water Quality Monitoring Station downstream at Route 729 in Culpeper County.
3-HAZ009.58	VADEQ Ambient Water Quality Monitoring Station downstream at the Route 229 bridge in Culpeper County.
3-HAZ029.30	VA0088749 Boston Water & Sewer WWTP is a proposed facility that will discharge to the Hazel River downstream of this facility. This plant will eliminate the discharge from VA0065358 (See Section 21.j.).

The Hazel River does not serve as a known source for potable water withdrawals.

13. Material Storage:

TABLE 3 - Material Storage		
Materials Description	Volume Stored	Spill/Stormwater Prevention Measures
Soda Ash	1- 45 pound bucket	Stored in the onsite shed.

14. Site Inspection:

A full technical inspection was performed by Wilamena Harback on March 20, 2007. A copy of the inspection summary has been placed in the reissuance file.

15. Receiving Stream Water Quality and Water Quality Standards:a) Ambient Water Quality Data

There are no ambient water quality monitoring stations on the unnamed tributary to Hazel River. The tributary enters the Hazel River just upstream from VA DEQ special studies station 3-HAZ026.16, located at the Route 522 bridge crossing. This station is located approximately 2.2 river miles downstream from the Outfall of VA0065358.

The following is the monitoring summary for Station 3-HAZ026.16 as recorded in the draft 2008 Integrated Assessment (Segment VAN-E04R-HAZ01C06): *E. coli* monitoring find a bacterial impairment, resulting in an impaired classification for the recreation use. The aquatic life use is considered fully supporting. Wildlife and fish consumption were not assessed. Sufficient excursions from the instantaneous *E. coli* bacteria criterion (5 of 11 samples - 45.4%) were recorded at DEQ's ambient water quality monitoring station (3-HAZ026.16) at the Route 522 crossing to assess this stream segment as not supporting of the recreation use goal for the 2008 water quality assessment. The segment was previously listed with a fecal coliform bacteria impairment in 2006, as well. The *E. coli* bacteria impairment was first listed in 2006.

b) Receiving Stream Water Quality Criteria

Part IX of 9 VAC 25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream, UT to Hazel River, is located within Section 4 of the Rappahannock River Basin, and classified as a Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32°C, and maintain a pH of 6.0-9.0 standard units (S.U.). Attachment 3 details other water quality criteria applicable to the receiving stream.

Ammonia:

The fresh water, aquatic life Water Quality Criteria for Ammonia are dependent on the instream temperature and pH. The 90th percentile temperature and pH values are used because they best represent the critical design conditions of the receiving stream. When the critical flows are zero, effluent pH and temperatures can be used to calculate the ammonia water quality standards. Staff evaluated the effluent data for pH and temperature and found no significant differences from the data used to establish ammonia criteria and subsequent effluent limits in the 2003 permit. A copy of the pH and temperature data has been placed in the reissuance file. The current ammonia criteria are presented in the table in Attachment 3.

Metals Criteria:

The Water Quality Criteria for some metals are dependent on the receiving stream's hardness (expressed as mg/l calcium carbonate). The 7Q10 of the receiving stream is zero and no ambient data is available, the effluent data for hardness can be used to determine the metals criteria. The hardness-dependent metals criteria in Attachment 3 are based on an effluent value of 83 mg/L.

Bacteria Criteria: The Virginia Water Quality Standards (9 VAC 25-260-170 B.) states sewage discharges shall be disinfected to achieve the following criteria:

- 1) *E. coli* bacteria per 100 ml of water shall not exceed the following:

	Geometric Mean ¹	Single Sample Maximum
Freshwater <i>E. coli</i> (N/100 ml)	126	235

¹For two or more samples [taken during any calendar month].

- c) Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9 VAC 25-260-360, 370 and 380) designates the river basins, sections, classes, and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, UT Hazel River, is located within Section 4 of the Rappahannock Basin. This section has been designated with no special standards. Note: This section used to be designated with special standard "q," but this standard was repealed and is no longer applicable.

- d) Threatened or Endangered Species

The Virginia DGIF Fish and Wildlife Information System Database was searched for records to determine if there are threatened or endangered species in the vicinity of the discharge. The following threatened or endangered species was identified within a 2 mile radius of the discharge: Yellow Lance. The limits proposed in this draft permit are protective of the Virginia Water Quality Standards and therefore, protect the threatened and endangered species found near the discharge.

16. Antidegradation (9 VAC 25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The receiving stream has been classified as Tier 1 based on an evaluation of the critical flows of the UT. Since the critical flows are zero there are times that the flow in the UT is only from the discharge. Permit limits proposed have been established by determining wasteload allocations which will result in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development :

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points is equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards (WQS) are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLA) are calculated. In this case since the critical flows 7Q10 and 1Q10 have been determined to be zero, the WLA's are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency, and statistical characteristics of the effluent data.

a) Effluent Screening:

Effluent data obtained from the permit application and DMRs has been reviewed and determined to be suitable for evaluation. Effluent data were reviewed, and there have been a few exceedances of the established limitations for Total Recoverable Copper. In the past, the facility has had problems meeting the Whole Effluent Toxicity limit also.

The following pollutants require a wasteload allocation analysis: Ammonia as Nitrogen, Copper, and Zinc.

b) Mixing Zones and Wasteload Allocations (WLAs):

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{C_o [Q_e + (f)(Q_s)] - [(C_s)(f)(Q_s)]}{Q_e}$$

Where:

WLA	=	Wasteload allocation
C _o	=	In-stream water quality criteria
Q _e	=	Design flow
Q _s	=	Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; harmonic mean for carcinogen-human health criteria; and 30Q5 for non-carcinogen human health criteria)
f	=	Decimal fraction of critical flow
C _s	=	Mean background concentration of parameter in the receiving stream.

The water segment receiving the discharge via Outfall 001 is considered to have a 7Q10 and 1Q10 of 0.0 MGD. As such, there is no mixing zone and the WLA is equal to the C_o.

c) Effluent Limitations Toxic Pollutants, Outfall 001 –

9 VAC 25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9 VAC 25-31-230.D. requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Ammonia as N:

Staff evaluated the new effluent data and has concluded it is not significantly different than what was used to derive the existing ammonia limits (Attachment 4). Therefore, existing ammonia limitations are proposed to continue in the reissued permit.

2) Metals/Organics:

Limits for copper and zinc were established during the previous permit reissuance. See Attachment 4 for WLA and derivation of the limits. Since the facility has been meeting the Total Recoverable Zinc limitations, the monitoring shall be reduced to quarterly. Total Recoverable Copper shall remain at monthly; if after one year all samples have complied with the limit, the facility may request in writing that the monitoring can be reduced to quarterly.

d) Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants

No changes to dissolved oxygen (D.O.), biochemical oxygen demand-5 day (BOD₅), total suspended solids (TSS), ammonia as nitrogen, and pH limitations are proposed.

Dissolved Oxygen and BOD₅ limitations are based on the stream assimilation analysis conducted January 29, 1980 (Attachment 5). It is staff's practice to equate the Total Suspended Solids limits with the BOD₅ limits. TSS limits are established to equal BOD₅ limits since the two pollutants are closely related in terms of treatment of domestic sewage.

Limits for chlorine have been removed from the permit during this reissuance since the facility installed a UV system in August 2005.

pH limitations are set at the water quality criteria. *E. coli* limitations are in accordance with the Water Quality Standards 9 VAC25-260-170.

e) Effluent Limitations and Monitoring Summary.

The effluent limitations and monitoring are presented in the following table. Limits were established for Flow, BOD₅, Total Suspended Solids, Ammonia as N, pH, Dissolved Oxygen, Total Recoverable Copper, Total Recoverable Zinc, *E. coli*, and a Whole Effluent Toxicity Limit.

The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/l), with the flow values (in MGD) and a conversion factor of 3.785.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual.

18. Antibacksliding:

All limits in this permit are at least as stringent as those previously established. Backsliding does not apply to this reissuance.

19. Effluent Limitations/Monitoring Requirements:

Design flow is 0.015 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS						MONITORING REQUIREMENTS	
		Monthly Average		Weekly Average		Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL		NA		NA	NL	1/D	Estimate
pH	3	NA		NA		6.0 S.U.	9.0 S.U.	1/D	Grab
BOD ₅	3,5	30 mg/L	1.7 kg/day	45 mg/L	2.6 kg/day	NA	NA	1/M	Grab
Total Suspended Solids (TSS)	2	30 mg/L	1.7 kg/day	45 mg/L	2.6 kg/day	NA	NA	1/M	Grab
DO	3,5	NA		NA		6.0 mg/L	NA	1/D	Grab
Ammonia, as N (mg/L)	3	1.5 mg/L		1.5 mg/L		NA	NA	1/M	Grab
<i>E. coli</i> (Geometric Mean)	3	126 n/100mls		NA		NA	NA	1/W	Grab
Total Recoverable Copper	3	18 ug/L		18 ug/L		NA	NA	1/M	Grab
Total Recoverable Zinc	3	130 ug/L		130 ug/L		NA	NA	1/3M	Grab
Chronic 3-brood Static Renewal (<i>Ceriodaphnia dubia</i>)	3	NA		NA		NA	1.44 TUc	1/3M	Grab
Chronic 7-day Static Renewal (<i>Pimephales promelas</i>)	3	NA		NA		NA	1.44 TUc	1/3M	Grab

The basis for the limitations codes are:

- | | |
|----------------------------------|------------------------------------|
| 1. Federal Effluent Requirements | NA = Not applicable. |
| 2. Best Professional Judgement | NL = No limit; monitor and report. |
| 3. Water Quality Standards | S.U. = Standard units. |
| 4. DEQ Disinfection Guidance | |
| 5. Stream Model- Attachment 5 | |

- | |
|---------------------------------|
| 1/D = Once every day. |
| 1/M = Once every month. |
| 1/3M = Once every three months. |
| 1/W = Once every week. |

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

20. Other Permit Requirements :

- a) Part I.B. of the permit contains quantification levels and compliance reporting instructions.

9 VAC 25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9 VAC 25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

- b) Permit Section Part I.C., details the requirements for Toxics Management Program.

The VPDES Permit Regulation at 9 VAC 25-31-210 requires monitoring and 9 VAC 25-31-220.I, requires limitations in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act. A TMP is imposed for municipal facilities with a design rate >1.0 MGD, with an approved pretreatment program or required to develop a pretreatment program, or those determined by the Board based on effluent variability, compliance history, IWC, and receiving stream characteristics.

Due to the printing operations connected to this facility, DEQ required the permittee to perform toxics monitoring. The acute and chronic tests failed, so DEQ notified the permittee on August 6, 1999 that a Toxics Reduction Evaluation (TRE) was necessary. A TRE plan was submitted in December 1999. The plan was to optimize the plant performance and plant modifications were made to reduce ammonia concentrations in the effluent. In June 2000, additional toxicity tests were done. The acute tests passed, but the chronic tests failed – NOEC = 50% for *C. dubia*. DEQ notified the permittee in August 2000 that a Toxics Identification Evaluation (TIE) plan was needed. Since then, no specific toxicant has been identified and the chronic tests continue to fail the criteria. In January 2003, DEQ notified the permittee that a Whole Effluent Toxicity (WET) limit would be required with the permit reissuance.

Since the facility has had continuing problems with the chronic toxicity testing and has not identified a specific pollutant causing the toxicity, a WET limit was included in the 2003 reissuance. The WET limit was determined using the 12/5/01 revision of the WETLIM10.xls file (Attachment 6). The WET limit established was 1.44 TU_c, which is equal to a NOEC of 69%. Monitoring is quarterly for the chronic toxicity tests for *C. dubia* and *P. promelas* in the current permit. With this reissuance the monitoring shall continue to be quarterly due to exceedances of the WET limit in May 2006 and June 2007. If the facility has 12 consecutive quarters with no problems with the toxicity testing, the facility may request that the toxicity monitoring be reduced to semiannual monitoring.

21. Other Special Conditions :

- a) 95% Capacity Reopener. The VPDES Permit Regulation at 9 VAC 25-31-200.B.2. requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. The facility is a PVOTW.
- b) Indirect Dischargers. Required by VPDES Permit Regulation, 9 VAC 25-31-280 B.9 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.
- c) O&M Manual Requirement. Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790; VPDES Permit Regulation, 9 VAC 25-31-190.E. Within 90 days of the effective date of this permit, the permittee shall submit for approval an Operations and Maintenance (O&M) Manual or a statement confirming the accuracy and completeness of the current O&M Manual to the Department of Environmental Quality, Northern Regional Office (DEQ-NRO). Future changes to the facility must be addressed by the submittal of a revised O&M Manual within 90 days of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.

- d) CTC, CTO Requirement. The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct prior to commencing construction and to obtain a Certificate to Operate prior to commencing operation of the treatment works.
- e) Licensed Operator Requirement. The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9 VAC 25-31-200 D, and Rules and Regulations for Waterworks and Wastewater Works Operators (18 VAC 160-20-10 et seq.) requires licensure of operators. This facility requires a Class IV operator.
- f) Reliability Class. The Sewage Collection and Treatment Regulation at 9 VAC 25-790 requires sewerage works achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. The facility is required to meet a reliability Class of II.
- g) Water Quality Criteria Reopener. The VPDES Permit Regulation at 9 VAC 25-31-220 D. requires establishment of effluent limitations to ensure attainment/maintenance of receiving stream water quality criteria. Should effluent monitoring indicate the need for any water quality-based limitations, this permit may be modified or alternatively revoked and reissued to incorporate appropriate limitations.
- h) Sludge Reopener. The VPDES Permit Regulation at 9 VAC 25-31-200.C.4. requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the CWA. The facility includes a sewage treatment works.
- i) Sludge Use and Disposal. The VPDES Permit Regulation at 9 VAC 25-31-100.P., 220.B.2., and 420-720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. The facility includes a treatment works treating domestic sewage.
- j) Elimination of Discharge. This special condition requires the permittee to eliminate the discharge from outfall 001 and submit a plan and schedule for closure of the existing wastewater treatment facility (VA0065358) within 30 days of the issuance of an CTO for the new Boston Water & Sewer wastewater treatment facility (VA0088749). The closure plan and schedule shall be submitted to DEQ for review and approval.

Permit Section Part II. Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

23. Changes to the Permit from the Previously Issued Permit:

- a) Special Conditions:
 - 1) The schedule of compliance for copper and zinc has been removed.
 - 2) The Water Quality Criteria Monitoring has been removed.
 - 3) The schedule of compliance for *E. coli* has been removed.
- b) Monitoring and Effluent Limitations:
 - 1) Total Residual Chlorine limits have been removed since the facility now uses a UV system for disinfection.
 - 2) The Total Recoverable Zinc monitoring was reduced to quarterly. Language was added for Total Recoverable Copper to allow a monitoring reduction if the facility has one year of data that complies with the limit.

24. Variances/Alternate Limits or Conditions:

The facility requested and was granted a waiver from the testing of pesticides, herbicides, and radionuclides that was included in the Water Quality Criteria Monitoring as part of the last reissuance. These compounds have not been detected in past scans and are not parameters of concern from this minor municipal treatment works.

25. Public Notice Information:

First Public Notice Date: 11/13/08

Second Public Notice Date: 11/20/08

Public Notice Information is required by 9 VAC 25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: DEQ Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3834, althompson@deq.virginia.gov. See Attachment 7 for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given.

26. 303 (d) Listed Stream Segments and Total Max. Daily Loads (TMDL):

Segment VAN-E04R_HAZ01C06 of the Hazel River is included in the Bacteria Total Maximum Daily Load Development for the Rappahannock River Basin, which was submitted to the EPA on May 1, 2007, and approved January 23, 2008. While the TMDL did not include the UT to the Hazel River, it did include the Hazel River at segment VAN-E04R_HAZ01C06 and it did consider all upstream impacts from point sources. Thus, VA0065358 was included in the TMDL for the Hazel River.

Currently, there are two permitted treatment facilities associated with Boston Sewer and Water (VA0065358 and VA0088749). VA0065358 is currently in operation, and has a design flow of 0.0150 MGD. VA0088749, has not been built yet, but has a design flow of 0.45 MGD. Once the second facility has been built, and begins operation, the first facility will go offline. Thus, during TMDL development, staff decided that it was not practical to assign a load for both facilities, since both facilities will not be operating at the same time. Rather, a load was assigned to the facilities based off the maximum design flow of the new facility, VA0088749, because that facility has the larger design flow. A load for the new facility will be sufficient to cover the current facility while it is in operation, and provide for the operation of the new facility, once it is built. Thus, the WLA assigned to the current facility (VA0065358) is based off its maximum permitted design flow of 0.0150 MGD, and thus, is 2.61E+10 cfu/year for *E. coli* bacteria.

TMDL Reopener: This special condition is to allow the permit to reopened if necessary to bring it in compliance with any applicable TMDL that may be developed and approved for the receiving stream.

27. Additional Comments:

Previous Board Action: The Consent Special Order issued 3/24/04 required Boston Water and Sewer Company to implement a wastewater monitoring program and monitor organic loadings and amend the O&M Manual to reflect those changes. They implemented both programs and the amended O&M Manual was approved by DEQ on 11/30/05. Finally, they completed a whole effluent toxicity analysis program and implemented a corrective action (installation of a UV system) that, after reviewing quarterly data for the past year, appears to have corrected the toxicity issue which was the main reason for the issuance of the Order. This order was cancelled effective January 5, 2006.

Staff Comments: This permit action was delayed due to staff workload.

Public Comment: No comments were received during the public notice.

EPA Checklist: The checklist can be found in Attachment 8.

Attachments to the Fact Sheet for Boston Water & Sewer STP – VA0065358

- Attachment 1 - Flow Frequency Determination dated February 3, 1998
- Attachment 2 - Outfall location on the USGS Woodville Quadrangle topographic map
- Attachment 3 - MSTRANTI - Water Quality Criteria and Wasteload Allocations
- Attachment 4 - Limit development for Ammonia, Copper and Zinc
- Attachment 5 - Stream Assimilation Analysis dated January 29, 1980
- Attachment 6 - Calculation of the Whole Effluent Toxicity Limit
- Attachment 7 - Public Notice
- Attachment 8 - EPA Checklist

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
Water Quality Assessments and Planning
629 E. Main Street P.O. Box 10009 Richmond, Virginia 23240

SUBJECT: Flow Frequency Determination
American Security Council Foundation STP - VA#0065358

TO: James Olson, NRO

FROM: Paul E. Herman, P.E., WQAP

DATE: February 3, 1998

COPIES: Ron Gregory, Charles Martin, File

This memo supercedes my February 9, 1993 memo to Jennie Dollard concerning the subject VPDES permit.

The American Security Council Foundation STP discharges to an unnamed tributary to the Hazel River near Slate Mills, VA. Stream flow frequencies are required at this site for use by the permit writer in developing effluent limitations for the VPDES permit.

At the discharge point, the receiving stream is depicted as a dry ravine on the USGS Woodville Quadrangle topographic map. The flow frequencies for dry ravines are 0.0 cfs for the 1Q10, 7Q10, 30Q5, high flow 1Q10, high flow 7Q10, and harmonic mean. For modeling purposes, flow frequencies have been determined for the Hazel River at a point just upstream of the dry ravine.

The VDEQ operated a continuous record gage on the Hazel River at Rixeyville Mills, VA (#01663500) from 1942 to 1993. The gage was located at the Route 229 bridge in Culpeper County, VA. The flow frequencies for the gage and the point on the Hazel River above the dry ravine are presented below. The values above the dry ravine were determined by drainage area proportions and do not address any withdrawals, discharges, or springs lying upstream.

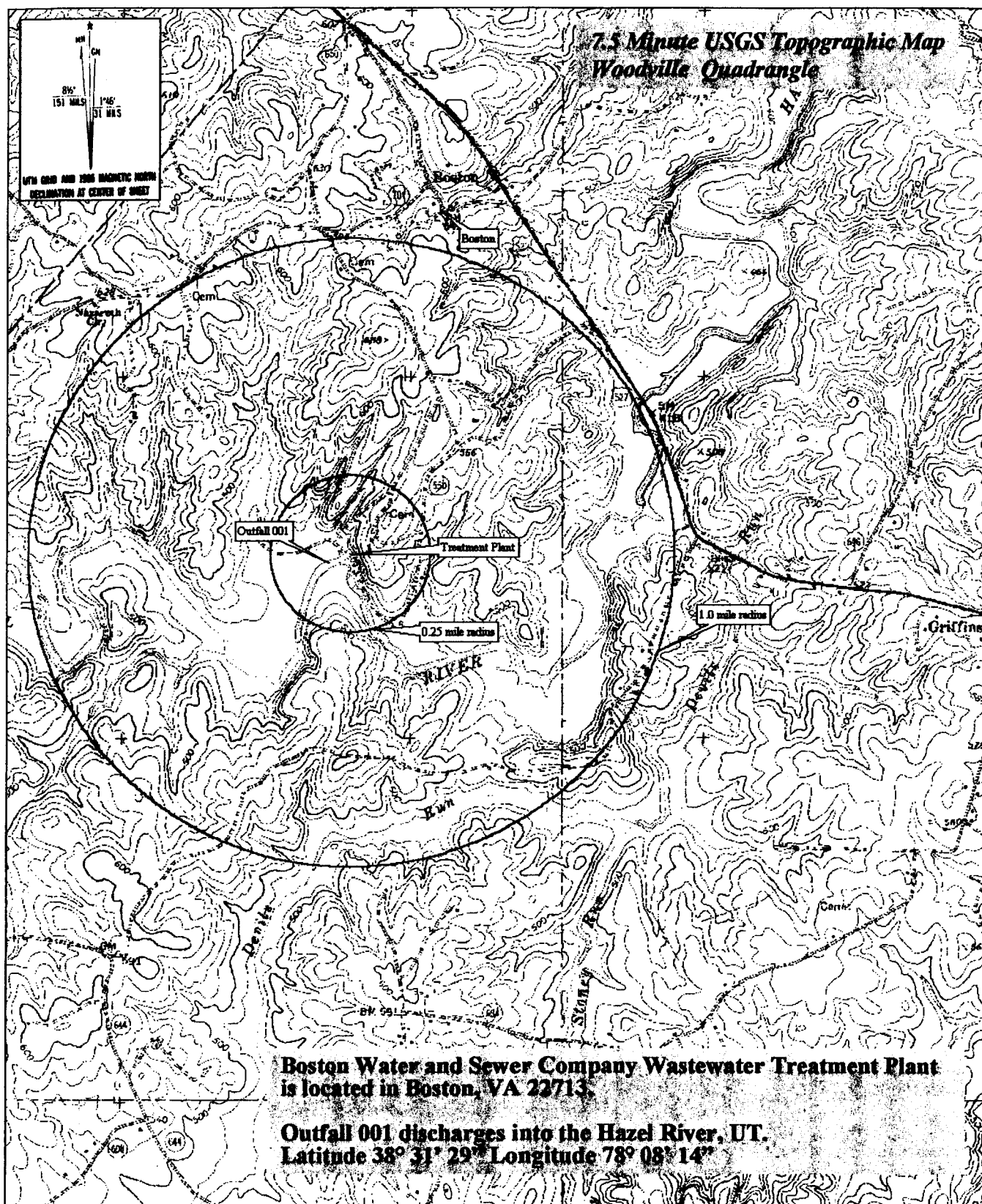
Hazel River at Rixeyville, VA (#01663500):

Drainage Area = 287 mi ²		
1Q10 = 3.8 cfs	High Flow 1Q10 = 64 cfs	
7Q10 = 5.7 cfs	High Flow 7Q10 = 74 cfs	
30Q5 = 19 cfs	HM = 86 cfs	

Hazel River above dry ravine:

Drainage Area = 59.1 mi ²	
1Q10 = 0.78 cfs	High Flow 1Q10 = 13 cfs
7Q10 = 1.2 cfs	High Flow 7Q10 = 15 cfs
30Q5 = 3.9 cfs	HM = 18 cfs

The high flow months are January through May. If you have any questions concerning this analysis, please let me know.



FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Boston Water & Sewer STP

Permit No.: VA0065358

Receiving Stream: UT, Hazel River

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO3) =	mg/L	1Q10 (Annual) =	0 MGD	Annual - 1Q10 Mix =	100 %	Mean Hardness (as CaCO3) =	83 mg/L
90% Temperature (Annual) =	deg C	7Q10 (Annual) =	0 MGD	- 7Q10 Mix =	100 %	90% Temp (Annual) =	22.8 deg C
90% Temperature (Wet season) =	deg C	30Q10 (Annual) =	0 MGD	- 30Q10 Mix =	100 %	90% Temp (Wet season) =	deg C
90% Maximum pH =	SU	1Q10 (Wet season) =	0 MGD	Wet Season - 1Q10 Mix =	100 %	90% Maximum pH =	8.26 SU
10% Maximum pH =	SU	30Q10 (Wet season) =	0 MGD	- 30Q10 Mix =	100 %	10% Maximum pH =	SU
Tier Designation (1 or 2) =	1	30Q5 =	0 MGD			Discharge Flow =	0.015 MGD
Public Water Supply (PWS) Y/N? =	n	Harmonic Mean =	0 MGD				
Trout Present Y/N? =	n	Annual Average =	n/a MGD				
Early Life Stages Present Y/N? =	y						

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenaphthene	0	--	--	na	2.7E+03	--	--	na	2.7E+03	--	--	--	--	--	--	--	--	--	--	na	2.7E+03
Acrolein	0	--	--	na	7.8E+02	--	--	na	7.8E+02	--	--	--	--	--	--	--	--	--	--	na	7.8E+02
Acrylonitrile ^C	0	--	--	na	6.6E+00	--	--	na	6.6E+00	--	--	--	--	--	--	--	--	--	--	na	6.6E+00
Aldrin ^C	0	3.0E+00	--	na	1.4E-03	3.0E+00	--	na	1.4E-03	--	--	--	--	--	--	--	--	3.0E+00	--	na	1.4E-03
Ammonia-N (mg/l) (Yearly)	0	5.10E+00	9.54E-01	na	--	5.1E+00	9.5E-01	na	--	--	--	--	--	--	--	--	--	5.1E+00	9.5E-01	na	--
Ammonia-N (mg/l) (High Flow)	0	5.10E+00	1.63E+00	na	--	5.1E+00	1.6E+00	na	--	--	--	--	--	--	--	--	--	5.1E+00	1.6E+00	na	--
Anthracene	0	--	--	na	1.1E+05	--	--	na	1.1E+05	--	--	--	--	--	--	--	--	--	--	na	1.1E+05
Antimony	0	--	--	na	4.3E+03	--	--	na	4.3E+03	--	--	--	--	--	--	--	--	--	--	na	4.3E+03
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	3.4E+02	1.5E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene ^C	0	--	--	na	7.1E+02	--	--	na	7.1E+02	--	--	--	--	--	--	--	--	--	--	na	7.1E+02
Benzidine ^C	0	--	--	na	5.4E-03	--	--	na	5.4E-03	--	--	--	--	--	--	--	--	--	--	na	5.4E-03
Benzo (a) anthracene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (b) fluoranthene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (k) fluoranthene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (a) pyrene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Bis(2-Chloroethyl) Ether	0	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	--	--	--	--	--	--	--	--	na	1.4E+01
Bis(2-Chloroisopropyl) Ether	0	--	--	na	1.7E+05	--	--	na	1.7E+05	--	--	--	--	--	--	--	--	--	--	na	1.7E+05
Bromoform ^C	0	--	--	na	3.6E+03	--	--	na	3.6E+03	--	--	--	--	--	--	--	--	--	--	na	3.6E+03
Butylbenzylphthalate	0	--	--	na	5.2E+03	--	--	na	5.2E+03	--	--	--	--	--	--	--	--	--	--	na	5.2E+03
Cadmium	0	3.2E+00	9.8E-01	na	--	3.2E+00	9.8E-01	na	--	--	--	--	--	--	--	--	--	3.2E+00	9.8E-01	na	--
Carbon Tetrachloride ^C	0	--	--	na	4.4E+01	--	--	na	4.4E+01	--	--	--	--	--	--	--	--	--	--	na	4.4E+01
Chlordane ^C	0	2.4E+00	4.3E-03	na	2.2E-02	2.4E+00	4.3E-03	na	2.2E-02	--	--	--	--	--	--	--	--	2.4E+00	4.3E-03	na	2.2E-02
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	8.6E+05	2.3E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.9E+01	1.1E+01	na	--
Chlorobenzene	0	--	--	na	2.1E+04	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	--	--	na	2.1E+04

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane ^C	0	--	--	na	3.4E+02	--	--	na	3.4E+02	--	--	--	--	--	--	--	--	--	--	na	3.4E+02
Chloroform ^C	0	--	--	na	2.9E+04	--	--	na	2.9E+04	--	--	--	--	--	--	--	--	--	--	na	2.9E+04
2-Chloronaphthalene	0	--	--	na	4.3E+03	--	--	na	4.3E+03	--	--	--	--	--	--	--	--	--	--	na	4.3E+03
2-Chlorophenol	0	--	--	na	4.0E+02	--	--	na	4.0E+02	--	--	--	--	--	--	--	--	--	--	na	4.0E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	--
Chromium III	0	4.9E+02	6.4E+01	na	--	4.9E+02	6.4E+01	na	--	--	--	--	--	--	--	--	--	4.9E+02	6.4E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--
Chromium, Total	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Copper	0	1.1E+01	7.6E+00	na	--	1.1E+01	7.6E+00	na	--	--	--	--	--	--	--	--	--	1.1E+01	7.6E+00	na	--
Cyanide	0	2.2E+01	5.2E+00	na	2.2E+05	2.2E+01	5.2E+00	na	2.2E+05	--	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	2.2E+05
DDD ^C	0	--	--	na	8.4E-03	--	--	na	8.4E-03	--	--	--	--	--	--	--	--	--	--	na	8.4E-03
DDE ^C	0	--	--	na	5.9E-03	--	--	na	5.9E-03	--	--	--	--	--	--	--	--	--	--	na	5.9E-03
DDT ^C	0	1.1E+00	1.0E-03	na	5.9E-03	1.1E+00	1.0E-03	na	5.9E-03	--	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	5.9E-03
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Dibenz(a,h)anthracene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Dibutyl phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	1.2E+04
Dichloromethane (Methylene Chloride) ^C	0	--	--	na	1.6E+04	--	--	na	1.6E+04	--	--	--	--	--	--	--	--	--	--	na	1.6E+04
1,2-Dichlorobenzene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
1,3-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	--	--	na	2.6E+03
1,4-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	--	--	na	2.6E+03
3,3-Dichlorobenzidine ^C	0	--	--	na	7.7E-01	--	--	na	7.7E-01	--	--	--	--	--	--	--	--	--	--	na	7.7E-01
Dichlorobromomethane ^C	0	--	--	na	4.6E+02	--	--	na	4.6E+02	--	--	--	--	--	--	--	--	--	--	na	4.6E+02
1,2-Dichloroethane ^C	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02
1,1-Dichloroethylene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
1,2-trans-dichloroethylene	0	--	--	na	1.4E+05	--	--	na	1.4E+05	--	--	--	--	--	--	--	--	--	--	na	1.4E+05
2,4-Dichlorophenol	0	--	--	na	7.9E+02	--	--	na	7.9E+02	--	--	--	--	--	--	--	--	--	--	na	7.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane ^C	0	--	--	na	3.9E+02	--	--	na	3.9E+02	--	--	--	--	--	--	--	--	--	--	na	3.9E+02
1,3-Dichloropropene	0	--	--	na	1.7E+03	--	--	na	1.7E+03	--	--	--	--	--	--	--	--	--	--	na	1.7E+03
Dieldrin ^C	0	2.4E-01	5.6E-02	na	1.4E-03	2.4E-01	5.6E-02	na	1.4E-03	--	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	1.4E-03
Diethyl Phthalate	0	--	--	na	1.2E+05	--	--	na	1.2E+05	--	--	--	--	--	--	--	--	--	--	na	1.2E+05
Di-2-Ethylhexyl Phthalate ^C	0	--	--	na	5.9E+01	--	--	na	5.9E+01	--	--	--	--	--	--	--	--	--	--	na	5.9E+01
2,4-Dimethylphenol	0	--	--	na	2.3E+03	--	--	na	2.3E+03	--	--	--	--	--	--	--	--	--	--	na	2.3E+03
Dimethyl Phthalate	0	--	--	na	2.9E+06	--	--	na	2.9E+06	--	--	--	--	--	--	--	--	--	--	na	2.9E+06
Di-n-Butyl Phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	1.2E+04
2,4 Dinitrophenol	0	--	--	na	1.4E+04	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	1.4E+04
2-Methyl-4,6-Dinitrophenol	0	--	--	na	7.65E+02	--	--	na	7.7E+02	--	--	--	--	--	--	--	--	--	--	na	7.7E+02
2,4-Dinitrotoluene ^C	0	--	--	na	9.1E+01	--	--	na	9.1E+01	--	--	--	--	--	--	--	--	--	--	na	9.1E+01
Dioxin (2,3,7,8- tetrachlorodibenzo-p-dioxin) (ppq)	0	--	--	na	1.2E-06	--	--	na	na	--	--	--	--	--	--	--	--	--	--	na	na
1,2-Diphenylhydrazine ^C	0	--	--	na	5.4E+00	--	--	na	5.4E+00	--	--	--	--	--	--	--	--	--	--	na	5.4E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	2.4E+02
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	2.4E+02
Endosulfan Sulfate	0	--	--	na	2.4E+02	--	--	na	2.4E+02	--	--	--	--	--	--	--	--	--	--	na	2.4E+02
Endrin	0	8.6E-02	3.6E-02	na	8.1E-01	8.6E-02	3.6E-02	na	8.1E-01	--	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	8.1E-01
Endrin Aldehyde	0	--	--	na	8.1E-01	--	--	na	8.1E-01	--	--	--	--	--	--	--	--	--	--	na	8.1E-01

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.9E+04	--	--	na	2.9E+04	--	--	--	--	--	--	--	--	--	--	na	2.9E+04
Fluoranthene	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E+02
Fluorene	0	--	--	na	1.4E+04	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	1.4E+04
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor ^C	0	5.2E-01	3.8E-03	na	2.1E-03	5.2E-01	3.8E-03	na	2.1E-03	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	2.1E-03
Heptachlor Epoxide ^C	0	5.2E-01	3.8E-03	na	1.1E-03	5.2E-01	3.8E-03	na	1.1E-03	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	1.1E-03
Hexachlorobenzene ^C	0	--	--	na	7.7E-03	--	--	na	7.7E-03	--	--	--	--	--	--	--	--	--	--	na	7.7E-03
Hexachlorobutadiene ^C	0	--	--	na	5.0E+02	--	--	na	5.0E+02	--	--	--	--	--	--	--	--	--	--	na	5.0E+02
Hexachlorocyclohexane																					
Alpha-BHC ^C	0	--	--	na	1.3E-01	--	--	na	1.3E-01	--	--	--	--	--	--	--	--	--	--	na	1.3E-01
Hexachlorocyclohexane																					
Beta-BHC ^C	0	--	--	na	4.6E-01	--	--	na	4.6E-01	--	--	--	--	--	--	--	--	--	--	na	4.6E-01
Hexachlorocyclohexane																					
Gamma-BHC ^C (Lindane)	0	9.5E-01	na	na	6.3E-01	9.5E-01	--	na	6.3E-01	--	--	--	--	--	--	--	--	9.5E-01	--	na	6.3E-01
Hexachlorocyclopentadiene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
Hexachloroethane ^C	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	--
Indeno (1,2,3-cd) pyrene ^C	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone ^C	0	--	--	na	2.6E+04	--	--	na	2.6E+04	--	--	--	--	--	--	--	--	--	--	na	2.6E+04
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	9.4E+01	1.1E+01	na	--	9.4E+01	1.1E+01	na	--	--	--	--	1E	--	--	--	--	9.4E+01	1.1E+01	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	na	5.1E-02	1.4E+00	7.7E-01	na	5.1E-02	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	na	5.1E-02
Methyl Bromide	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E+03
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	0E	--	--	--	--	--	0.0E+00	na	--
Monochlorobenzene	0	--	--	na	2.1E+04	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	--	--	na	2.1E+04
Nickel	0	1.6E+02	1.7E+01	na	4.6E+03	1.6E+02	1.7E+01	na	4.6E+03	--	--	--	--	--	--	--	--	1.6E+02	1.7E+01	na	4.6E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
N-Nitrosodimethylamine ^C	0	--	--	na	8.1E+01	--	--	na	8.1E+01	--	--	--	--	--	--	--	--	--	--	na	8.1E+01
N-Nitrosodiphenylamine ^C	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	--	--	na	1.6E+02
N-Nitrosodi-n-propylamine ^C	0	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	--	--	--	--	--	--	--	--	na	1.4E+01
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	6.5E-02	1.3E-02	na	--
PCB-1016	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1221	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1232	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1242	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1248	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1254	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1260	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB Total ^C	0	--	--	na	1.7E-03	--	--	na	1.7E-03	--	--	--	--	--	--	--	--	--	--	na	1.7E-03

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Pentachlorophenol ^C	0	7.7E-03	5.9E-03	na	8.2E+01	7.7E-03	5.9E-03	na	8.2E+01	--	--	--	--	--	--	--	--	7.7E-03	5.9E-03	na	8.2E+01
Phenol	0	--	--	na	4.6E+06	--	--	na	4.6E+06	--	--	--	--	--	--	--	--	--	--	na	4.6E+06
Pyrene	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
Radionuclides (pCi/l except Beta/Photon)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity Beta and Photon Activity (mrem/yr)	0	--	--	na	1.5E+01	--	--	na	1.5E+01	--	--	--	--	--	--	--	--	--	--	na	1.5E+01
Strontium-90	0	--	--	na	4.0E+00	--	--	na	4.0E+00	--	--	--	--	--	--	--	--	--	--	na	4.0E+00
Tritium	0	--	--	na	8.0E+00	--	--	na	8.0E+00	--	--	--	--	--	--	--	--	--	--	na	8.0E+00
Selenium	0	--	--	na	2.0E+04	--	--	na	2.0E+04	--	--	--	--	--	--	--	--	--	--	na	2.0E+04
Silver	0	2.0E+01	5.0E+00	na	1.1E+04	2.0E+01	5.0E+00	na	1.1E+04	--	--	--	--	--	--	--	--	2.0E+01	5.0E+00	na	1.1E+04
Sulfate	0	2.5E+00	--	na	--	2.5E+00	--	na	--	--	--	--	--	--	--	--	--	2.5E+00	--	na	--
1,1,2,2-Tetrachloroethane ^C	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Tetrachloroethylene ^C	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Thallium	0	--	--	na	1.1E+02	--	--	na	1.1E+02	--	--	--	--	--	--	--	--	--	--	na	1.1E+02
Toluene	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Total dissolved solids	0	--	--	na	6.3E+00	--	--	na	6.3E+00	--	--	--	--	--	--	--	--	--	--	na	6.3E+00
Toxaphene ^C	0	--	--	na	2.0E+05	--	--	na	2.0E+05	--	--	--	--	--	--	--	--	--	--	na	2.0E+05
Tributyltin	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2,4-Trichlorobenzene	0	7.3E-01	2.0E-04	na	7.5E-03	7.3E-01	2.0E-04	na	7.5E-03	--	--	--	--	--	--	--	--	7.3E-01	2.0E-04	na	7.5E-03
1,1,2-Trichloroethane ^C	0	4.6E-01	6.3E-02	na	--	4.6E-01	6.3E-02	na	--	--	--	--	--	--	--	--	--	4.6E-01	6.3E-02	na	--
Trichloroethylene ^C	0	--	--	na	9.4E+02	--	--	na	9.4E+02	--	--	--	--	--	--	--	--	--	--	na	9.4E+02
2,4,6-Trichlorophenol ^C	0	--	--	na	4.2E+02	--	--	na	4.2E+02	--	--	--	--	--	--	--	--	--	--	na	4.2E+02
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	8.1E+02	--	--	na	8.1E+02	--	--	--	--	--	--	--	--	--	--	na	8.1E+02
Vinyl Chloride ^C	0	--	--	na	6.5E+01	--	--	na	6.5E+01	--	--	--	--	--	--	--	--	--	--	na	6.5E+01
Zinc	0	--	--	na	6.1E+01	--	--	na	6.1E+01	--	--	--	--	--	--	--	--	--	--	na	6.1E+01
	0	1.0E+02	1.0E+02	na	6.9E+04	1.0E+02	1.0E+02	na	6.9E+04	--	--	--	--	--	--	--	--	1.0E+02	1.0E+02	na	6.9E+04

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
= (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Metal	Target Value (SSTV)
Antimony	4.3E+03
Arsenic	9.0E+01
Barium	na
Cadmium	5.9E-01
Chromium III	3.8E+01
Chromium VI	6.4E+00
Copper	4.5E+00
Iron	na
Lead	6.4E+00
Manganese	na
Mercury	5.1E-02
Nickel	1.0E+01
Selenium	3.0E+00
Silver	1.0E+00
Zinc	4.0E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Facility = Boston Water & Sewer
Chemical = Ammonia
Chronic averaging period = 30
WLAa = 3.2
WLAc = 0.73
Q.L. = .2
samples/mo. = 1
samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average = 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 1.47289916819391
Average Weekly limit = 1.47289916819391
Average Monthly Limit = 1.47289916819391

The data are:

Facility = Boston Water & Sewer
Chemical = TRC
Chronic averaging period = 4
WLAa = 0.019
WLAc = 0.011
Q.L. = .1
samples/mo. = 30
samples/wk. = 8

Summary of Statistics:

observations = 1
Expected Value = .2
Variance = .0144
C.V. = 0.6
97th percentile daily values = .486683
97th percentile 4 day average = .332758
97th percentile 30 day average = .241210
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 1.60883226245855E-02
Average Weekly limit = 9.59676626920106E-03
Average Monthly Limit = 7.9737131838758E-03

The data are:

0.2

Facility = Boston Water & Sewer

Chemical = Copper

Chronic averaging period = 4

WLAa = 19.39

WLAc = 12.83

Q.L. = .3

samples/mo. = 1

samples/wk. = 1

Summary of Statistics:

observations = 1

Expected Value = 16.4

Variance = 96.8256

C.V. = 0.6

97th percentile daily values = 39.9080

97th percentile 4 day average = 27.2861

97th percentile 30 day average = 19.7792

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity

Maximum Daily Limit = 18.764834479403

Average Weekly limit = 18.764834479403

Average Monthly Limit = 18.764834479403

The data are:

16.4

Facility = Boston Water & Sewer

Chemical = Zinc

Chronic averaging period = 4

WLAa = 126.86

WLAc = 114.91

Q.L. = .5

samples/mo. = 1

samples/wk. = 1

Summary of Statistics:

observations = 2

Expected Value = 130.2

Variance = 6102.73

C.V. = 0.6

97th percentile daily values = 316.830

97th percentile 4 day average = 216.625

97th percentile 30 day average = 157.028

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity

Maximum Daily Limit = 126.86

Average Weekly limit = 126.86

Average Monthly Limit = 126.86

The data are:

216

44.4

MEMORANDUM

State Water Control Board

2111 North Hamilton Street

P. O. Box 11143

Richmond, VA. 23230

SUBJECT: STREAM ANALYSIS - AMERICAN SECURITY COUNCIL EDUCATION
CENTER (CULPEPER COUNTY)

TO: G. Moore, NRO

FROM: B. Tuxford, BWCM *BRT*

DATE: January 29, 1980

COPIES: S. M. Billcheck, BAT

We have reviewed the stream assimilation analysis for the American Security Council Education Center discharge to the Hazel River (Culpeper County) and have not problems with the analysis as presented.

/ltc

MEMORANDUM

State Water Control Board

1111 North Hamilton Street

P. O. Box 11143

Richmond, VA. 23230

*Rec. 12/14/79
BWCM*

1/29/80

SUBJECT: CULPEPER COUNTY: American Security Council Education Center

TO: Pat Karn

FROM: Gary N. Moore *Gary*

DATE: December 11, 1979

COPIES: Burt Tuxford - BWCM

Standards for this discharge were originally set in September, 1973. No NPDES permit was ever issued. I have run the stream model again, using current procedures and have come up with slightly different standards.

The revised effluent standards are as follows:

Flow: 0.015 mgd
BOD₅ & SS: 30 mg/l
D.O.: 6.0 mg/l

Assumptions used:

Stream temp. 30C
Saturation D.O. 7.6
K₁ @ 20C 0.215
K₂ @ 20C 3.0
Stream flow 0.989 mgd (73 sq. mi. drainage, 0.021 cfs/sq. mi. critical
discharge for Hazel Run near Rixeyville)
stream velocity 0.5 fps

GNM/da

STREAM ASSIMILATION ANALYSIS

Stream: Hazel River
 Discharge: American Security Council Education Center

Date: 12-11-79
 Topo. Sheet: Woodville
 Critical Discharge: 0.021
 Gauging Station: Hazel River
at Rixeyville

Computation Number				
Drainage Area	73.00 mi			
Stream temperature	30			
Saturation D.O.	7.6			
▶ D.O. Discharge	6			
K ₁ (carbonaceous)215			
K _n (nitrogenous)	0			
K ₂ (reaeration)3			
Flow, mgd (discharge)015			
BOD ₅ (discharge)	30			
NOD _u (discharge)	0			
Flow, mgd (stream)	0.989			
BOD ₅ (stream)	2			
NOD _u (stream)	0			
Length of segment (mi)5			
Velocity of stream (fps) ...	1.5			
D.O. (allowable)	6.6			
D.O. (stream)	6.8			
Δ D.O. from allowable277			
(Red indicates violation)				
Flow (combined)	1.004			
BOD ₅ decay @ t	1.94			
NOD _u decay @ t	0			
time, days04			
D.O. @ t ("A" indicates ...	6.88 A			
Critical D.O.)				

Critical point is met in Hazel River
 Effluent limits: 30mg/l BOD₅ + SS
 6.0mg/l D.O.

Note: At the end of each segment, if critical D.O. has not been reached, the next stream segment should be analyzed. The parameter values determined @ time = t become the new "stream" data and new flows introduced to the stream (eg: tributaries, STP discharges, stretch flows) become the new "discharge" data.
 [K₁, K_n and K₂ must be adjusted as necessary]

mgd = (.646)cfs

Reviewer: Gary Moore

area. ^{Re}Anal^E is OK. Original analysis was in error. No DO limit is necessary. Approve analysis. BRT 11/11/80

→ American Security Council Education Center (CULPEPER CO.)

★ HAZEL RIVER

✓ BRT
11/11/80

$$Q_{7110} = \underline{0.020 \text{ cfs/mi}^2} \quad (\text{Thru Clim. Yr. 1977}) \quad \text{BRT}$$

$$DA = 73.0 \text{ mi}^2$$

$$Q_{7110} = 1.46 \text{ cfs} = \underline{0.944 \text{ mgd}}$$

$$T = 30^\circ\text{C}$$

$$\text{DO}_{\text{SAT}} = \underline{7.6 \text{ mg/L}} \quad 90\% = \underline{6.8 \text{ mg/L}}$$

$$K_{1,20} = 0.2 \text{ d}^{-1}, \quad K_{1,30} = \underline{0.296 \text{ d}^{-1}}$$

$$K_{2,20} = 1.0 \text{ d}^{-1}, \quad K_{2,30} = \underline{1.22 \text{ d}^{-1}}$$

$$V = 0.5 \text{ ffs}$$

$$L = 5.0 \text{ mi}$$

$$t = \underline{0.611 \text{ d}}$$

DISCHARGE

$$Q = 0.015 \text{ mgd}$$

$$\text{DO} = 6.8 \text{ mg/L}$$

$$\text{BOD}_5 = 24 \text{ mg/L}$$

$$\text{BOD}_u = \underline{31.2 \text{ mg/L}}$$

STREAM

$$Q = 0.944 \text{ mgd}$$

$$\text{DO} = 6.8 \text{ mg/L}$$

$$\text{BOD}_u = \underline{2.0 \text{ mg/L}}$$

DO mix:

$$\frac{(0.015 \times 6.8) + (0.944 \times 6.8)}{0.959} = \underline{6.8 \text{ mg/L}}$$

BOD_u mix:

$$\frac{(0.015 \times 31.2) + (0.944 \times 2)}{0.959} = \underline{2.46 \text{ mg/L}}$$

BOD_u mix:

$$\frac{(0.015 \times 39) + (0.944 \times 2)}{0.959} = \underline{2.58 \text{ mg/L}}$$

DO mix:

$$\frac{(0.015 \times 0) + (0.944 \times 6.8)}{0.959} = \underline{6.69 \text{ mg/L}}$$

INPUT	①	②	③	④
BOD _u	2.46	2.58	2.58	3.17
NOD _u	0	0	0	0
D _r	0.8	0.8	0.91	0.91
K ₁	0.296	0.296	0.296	0.296
K ₂	1.22	1.22	1.22	1.22
t _{tr}	0.01	0.01	0.01	0.01
DO _{SAT}	7.6	7.6	7.6	7.6
OUTPUT				
t _{tr}	0.611	0.611	0.611	0.611
D _r	OK	OK	OK	OK
DO	✓	✓	✓	✓
BOD _u				
NOD _u				

HAZEL R. @ Rixeyville, L

.....Q7/10 thru 1977

11.6000
12.7000
44.4000
38.6000
63.7000
102.0000
142.0000
54.4000
26.1000
69.6000
11.1000
3.3700
23.4000
35.3000
9.6000
61.6000
36.4000
57.4000
50.3000
30.1000
5.2400
6.3700
4.4900
1.3700
8.5700
11.1000
33.6000
15.3000
62.6000
66.7000
103.0000
43.1000
78.3000
24.4000

34.0000
47.6749
74.4337
123.1344

1.4022 A
0.4794 A

0.7320 A
1.3339

5.7910 A

.....

.....

30.0000
7.6000
6.8000
0.2000
0.0000
1.0000
0.0150
30.0000
0.0000

.....

0.9440
1.5385
0.0000
5.0000
0.5000
6.6000
6.8000

0.2161

0.9590
1.6141
0.0000
0.0416
6.8162

A

.....
.....

①

2.4600	↓	1
0.0000	↓	2
0.8000	↓	3
0.2960	↓	4
0.0000	↓	5
1.2200	↓	6
0.0100	↓	7
0.0100	↓	06
7.6000	↓	09

.....

0.0100	A
0.7975	A
6.8025	A
2.4527	
0.0000	

.....

0.0200	A
0.7950	A
6.8050	A
2.4454	
0.0000	

.....

0.0300	A
0.7925	A
6.8075	A
2.4382	
0.0000	

.....

0.6110	A
0.6633	A
6.9367	A
2.0530	
0.0000	

②

2.5800	↓	1
0.0000	↓	2
0.8000	↓	3
0.2960	↓	4
0.0000	↓	5
1.2200	↓	6
0.0100	↓	7
0.0100	↓	06
7.6000	↓	09

.....

0.0100	A
0.7979	A
6.8021	A
2.5723	
0.0000	

.....

0.0200	A
0.7958	A
6.8042	A
2.5647	
0.0000	

.....

0.6110	A
0.6772	A
6.9228	A
2.1531	
0.0000	

③

2.58000	↓	1
0.00000	↓	2
0.91000	↓	3
0.29600	↓	4
0.00000	↓	5
1.22000	↓	6
0.01000	↓	7
0.01000	↓	0.6
7.60000	↓	0.9
.....		
0.01000	A	
0.90654	A	
6.69346	A	
2.57237		
0.00000		
.....		
0.02000	A	
0.90310	A	
6.69690	A	
2.56477		
0.00000		
.....		
0.61100	A	
0.72938	A	
6.87062	A	
2.15315		
0.00000		

④

3.1700	↓	1
0.0000	↓	2
0.9100	↓	3
0.2960	↓	4
0.0000	↓	5
1.2200	↓	6
0.0100	↓	7
0.0100	↓	0.6
7.6000	↓	0.9
.....		
0.0100	A	
0.9083	A	
6.6917	A	
3.1606		
0.0000		
.....		
0.0200	A	
0.9066	A	
6.6934	A	
3.1512		
0.0000		
.....		
0.6110	A	
0.7975	A	
6.8025	A	
2.6455		
0.0000		

Culpeper County, Sewerage - LHS 120; Institute for American Study,
Boston, Va., Hazel River, Rappahannock River Basin

File

Anne Christy Ellerbrake

September 24, 1973

Plans call for an extended aeration plant, 15,000 gpd flow,
on the Hazel River near Boston, Va.

Initial assumptions:

$$\begin{aligned} K_{a20} &= 1 & K_{a30} &= 1.22 \text{ day}^{-1} \\ K_{d20} &= .2 & K_{d30} &= .296 \text{ day}^{-1} \end{aligned}$$

$$\begin{aligned} \text{effluent BOD}_5 &= 24 & \text{BOD}_u &= 31 \text{ (Lu)} \\ \text{effluent D.O} &= 6.8 \text{ mg/l} \end{aligned}$$

$$\begin{aligned} \text{stream BOD}_5 &= 1.5 & \text{BOD}_u &= 2 \text{ (Lu)} \\ \text{stream DO (90\% saturation)} &= 6.8 \text{ mg/l} \end{aligned}$$

$$Q \text{ of effluent} = .015 \text{ MGD}$$

$$Q \text{ of stream (critical discharge)} = 1.13 \text{ MGD (73 sq. miles of drainage basin, .024 cfs/sq.)}$$

Discharge to Hazel River

102/

$$\begin{aligned} 1. \text{ Mass balance } D_o &= 6.8 \text{ mg/l} & Q &= 1.145 \text{ MGD} \\ & \text{" } BOD_u &= 2.38 \text{ mg/l} \end{aligned}$$

$$2. \quad t_c = \text{mixing pt. is critical point}$$

Discharge of
LMS 120 - Freedom
Studies Center

Q = .015 MGD
DO = 6.8 mg/l
Lu = $24 \times 1.3 = 31 \text{ mg/l}$
 $Ka_{30} = 1.22 \text{ day}^{-1}$
 $Kd_{30} = .296 \text{ day}^{-1}$

to
Hazel
River

Q = 1.13
DO = 6.8 mg/l (90%
Saturation)
Lu = 2 mg/l

Mixing Pt.

Q = 1.145
DO = 6.8 mg/l
Lu = 2.38 mg/l

Mixing Pt. is critical
point,
therefore does not
degrade the waters

STAFF RECOMMENDATIONS

The writer will perform a stream assimilative capacity analysis keeping in mind that the stream is in very good condition (super saturated at the time of inspection) and that no other discharges enter the stream above or below the discharge point.

ACE/mk

Spreadsheet for determination of WET test endpoints or WET limits									
Excel 97		Acute Endpoint/Permit Limit		Use as LC ₅₀ in Special Condition, as TUA on DMR					
Revision Date: 12/05/01									
File: WETLIM10.xls		ACUTE 100% = NOAEC		LC ₅₀ = NA		% Use as NA		TUA	
(MIX.EXE required also)		ACUTE WLA _a 0.3		Note: Inform the permittee that if the mean of the data exceeds this TUA: 1.0 a limit may result using WLA.EXE					
		Chronic Endpoint/Permit Limit		Use as NOEC in Special Condition, as TUC on DMR					
		CHRONIC 1.462574684 TU _c		NOEC = 69		% Use as 1.44		TU _c	
		BOTH* 3.000000074 TU _c		NOEC = 34		% Use as 2.94		TU _c	
		AML 1.462574684 TU _c		NOEC = 69		% Use as 1.44		TU _c	
Enter data in the cells with blue type:									
Entry Date: 06/10/03		ACUTE WLA _{a,c} 3		Note: Inform the permittee that if the mean of the data exceeds this TUC: 1.0					
Facility Name: Boston Water & Sewer		CHRONIC WLA _c 1		Both means acute expressed as chronic a limit may result using WLA.EXE					
VPDES Number: VA0065358									
Outfall Number: 1									
% Flow to be used from MIX.EXE				Diffuser /modeling study?					
Plant Flow: 0.015 MGD				Enter Y/N		n			
Acute 1Q10: 0 MGD		100 %		Acute		1:1			
Chronic 7Q10: 0 MGD		100 %		Chronic		1:1			
Are data available to calculate CV? (Y/N)		N (Minimum of 10 data points, same species, needed)		Go to Page 2					
Are data available to calculate ACR? (Y/N)		N (NOEC<LC50, do not use greater/less than data)		Go to Page 3					
IWC _a 100 %		Plant flow/plant flow + 1Q10		NOTE: If the IWC _a is >33%, specify the					
IWC _c 100 %		Plant flow/plant flow + 7Q10		NOAEC = 100% test/endpoint for use					
Dilution, acute 1		100/IWC _a							
Dilution, chronic 1		100/IWC _c							
WLA _a 0.3		Instream criterion (0.3 TUA) X's Dilution, acute							
WLA _c 1		Instream criterion (1.0 TUC) X's Dilution, chronic							
WLA _{a,c} 3		ACR X's WLA _a - converts acute WLA to chronic units							
ACR -acute/chronic ratio 10		LC50/NOEC (Default is 10 - if data are available, use tables Page 3)							
CV-Coefficient of variation 0.6		Default of 0.6 - if data are available, use tables Page 2)							
Constants eA 0.4109447		Default = 0.41							
eB 0.0010373		Default = 0.60							
eC 2.4534175		Default = 2.43							
eD 2.4534175		Default = 2.43 (1 samp)							
		**The Maximum Daily Limit is calculated from the lowest LTA, X's eC. The LTA _{a,c} and MDL using it are driven by the ACR.							
LTA _{a,c} 1.2328341		WLA _{a,c} X's eA							
LTA _c 0.6010373		WLA _c X's eB							
MDL** with LTA _{a,c} 3.00000007		TU _c		NOEC = 33.333333		(Protects from acute/chronic toxicity)		Rounded NOEC's %	
MDL** with LTA _c 1.46257468		TU _c		NOEC = 68.372577		(Protects from chronic toxicity)		NOEC = 34 %	
AML with lowest LTA 1.46257468		TU _c		NOEC = 68.372577		Lowest LTA X's eD		NOEC = 69 %	
IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED, CONVERT MDL FROM TU _c to TU _a									
MDL with LTA _{a,c} 0.30000001		TU _a		LC50 = 333.333325		% Use NOAEC=100%		Rounded LC50's %	
MDL with LTA _c 0.14625747		TU _a		LC50 = 683.725769		% Use NOAEC=100%		LC50 = NA %	
								LC50 = NA %	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
1	Page 2 - Follow the directions to develop a site specific CV (coefficient of variation)															
2	IF YOU HAVE AT LEAST 10 DATA POINTS THAT ARE QUANTIFIABLE (NOT "1" OR "2") FOR A SPECIES, ENTER THE DATA IN EITHER COLUMN "G" (VERTEBRATE) OR COLUMN "I" (INVERTEBRATE). THE "CV" WILL BE PICKED UP FOR THE CALCULATIONS BELOW. THE DEFAULT VALUES FOR eA, eB, AND eC WILL CHANGE IF THE "CV" IS ANYTHING OTHER THAN 0.6						Vertebrate		Invertebrate							
3							IC ₂₅ Data		IC ₂₅ Data							
4							or		or							
5							LC ₅₀ Data		LC ₅₀ Data		LN of data		LN of data			
6							*****		*****							
7							0		0							
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																
21	Coefficient of Variation for effluent tests															
22	CV = 0.6 (Default 0.6)															
23	$\delta^2 = 0.3074847$															
24	$\delta = 0.55451303$															
25	Using the log variance to develop eA															
26	(P. 100, step 2a of TSD)															
27	Z = 1.881 (97% probability stat from table)															
28	A = -0.8892967															
29	eA = 0.41094469															
30	Using the log variance to develop eB															
31	(P. 100, step 2b of TSD)						St Dev		NEED DATA		NEED DATA		St Dev		NEED DATA/NEED DATA	
32	$\delta_A^2 = 0.0861777$						Mean		0		0		Mean		0	
33	$\delta_A = 0.29356038$						Variance		0		0.000000		Variance		0 0.000000	
34	B = -0.5080982						CV		0				CV		0	
35	eB = 0.60103733															
36	Using the log variance to develop eC															
37	(P. 100, step 4a of TSD)															
38	$\delta^2 = 0.3074847$															
39	$\delta = 0.55451303$															
40	C = 0.88929666															
41	eC = 2.43341753															
42	Using the log variance to develop eD															
43	(P. 100, step 4b of TSD)															
44	n = 1 This number will most likely stay as "1", for 1 sample/month.															
45	$\delta_n^2 = 0.3074847$															
46	$\delta_n = 0.55451303$															
47	D = 0.88929666															
48	eD = 2.43341753															

Page 3 - Follow directions to develop a site specific ACR (Acute to Chronic Ratio)

To determine Acute/Chronic Ratio (ACR), insert usable data below. Usable data is defined as valid paired test results, acute and chronic, tested at the same temperature, same species. The chronic NOEC must be less than the acute LC₅₀, since the ACR divides the LC₅₀ by the NOEC. LC₅₀'s >100% should not be used.

Table 1. ACR using Vertebrate data

Set #	LC ₅₀	NOEC	Test ACR	Logarithm	Geomean	Antilog	ACR to Use
1	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
3	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
4	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
5	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
6	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
8	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
9	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
10	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA

ACR for vertebrate data: 0

Table 1. Result:

Vertebrate ACR 0

Table 2. Result:

Invertebrate ACR 0

Lowest ACR Default to 10

Table 2. ACR using Invertebrate data

Set #	LC ₅₀	NOEC	Test ACR	Logarithm	Geomean	Antilog	ACR to Use
1	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
3	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
4	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
5	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
6	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
8	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
9	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
10	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA

ACR for vertebrate data: 0

Convert LC₅₀'s and NOEC's to Chronic TU's

for use in WLA.EXE

ACR used: 10

Table 3.

Enter LC ₅₀	TUc	Enter NOEC	TUc
1	NO DATA		NO DATA
2	NO DATA		NO DATA
3	NO DATA		NO DATA
4	NO DATA		NO DATA
5	NO DATA		NO DATA
6	NO DATA		NO DATA
7	NO DATA		NO DATA
8	NO DATA		NO DATA
9	NO DATA		NO DATA
10	NO DATA		NO DATA
11	NO DATA		NO DATA
12	NO DATA		NO DATA
13	NO DATA		NO DATA
14	NO DATA		NO DATA
15	NO DATA		NO DATA
16	NO DATA		NO DATA
17	NO DATA		NO DATA
18	NO DATA		NO DATA
19	NO DATA		NO DATA
20	NO DATA		NO DATA

If WLA.EXE determines that an acute limit is needed, you need to convert the TUc answer you get to TUa and then an LC₅₀.

enter it here: NO DATA %LC₅₀
NO DATA TUa

DILUTION SERIES TO RECOMMEND

Table 4.

	Monitoring % Effluent	TUc	Limit % Effluent	TUc
Dilution series based on data mean	100	1.0		
Dilution series to use for limit			69	1.4492754
Dilution factor to recommend:	0.5		0.8306624	
Dilution series to recommend:	100.0	1.00	100.0	1.00
	50.0	2.00	83.1	1.20
	25.0	4.00	69.0	1.45
	12.5	8.00	57.3	1.74
	6.25	16.00	47.6	2.10
Extra dilutions if needed	3.12	32.05	39.5	2.53
	1.56	64.10	32.9	3.04

Cell: I9

Comment:

Cell: K18

Comment: This is assuming that the data are Type 2 data (none of the data in the data set are censored - "<" or ">").

Cell: J22

Comment: Remember to change the "N" to "Y" if you have ratios entered, otherwise, they won't be used in the calculations.

Cell: C40

Comment:

If you have entered data to calculate an ACR on page 3, and this is still defaulted to "10", make sure you have selected "Y" in cell E21

Cell: C41

Comment: If you have entered data to calculate an effluent specific CV on page 2, and this is still defaulted to "0.6", make sure you have selected "Y" in cell E20

Cell: L48

Comment:

See Row 151 for the appropriate dilution series to use for these NOEC's

Cell: G62

Comment:

Vertebrates are:
Pimephales promelas
Oncorhynchus mykiss
Cyprinodon variegatus

Cell: J62

Comment:

Invertebrates are:
Ceriodaphnia dubia
Mystlopsis bahia

Cell: C117

Comment: Vertebrates are:

Pimephales promelas
Cyprinodon variegatus

Cell: M119

Comment: The ACR has been picked up from cell C34 on Page 1. If you have paired data to calculate an ACR, enter it in the tables to the left, and make sure you have a "Y" in cell E21 on Page 1. Otherwise, the default of 10 will be used to convert your acute data.

Cell: M121

Comment: If you are only concerned with acute data, you can enter it in the NOEC column for conversion and the number calculated will be equivalent to the TUa. The calculation is the same: $100/\text{NOEC} = \text{TUc}$ or $100/\text{LC50} = \text{TUa}$.

Cell: C138

Comment: Invertebrates are:

Ceriodaphnia dubia
Mystlopsis bahia

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY

Northern Virginia Regional Office

13901 Crown Court

Woodbridge, VA 22193

(703) 583-3800

SUBJECT: TOXICS MANAGEMENT PROGRAM (TMP) DATA REVIEW
Boston Water and Sewer STP (VA0065358)
REVIEWER: Douglas Frasier
DATE: 13 August 2008
COPIES: TMP file

PREVIOUS REVIEW: 28 April 2008

DATA REVIEWED:

This review covers the twentieth (20th) quarterly whole effluent toxicity (WET) chronic tests conducted in June 2008 for Outfall 001.

DISCUSSIONS:

The results of these toxicity tests, along with the results of previous toxicity tests conducted on effluent samples collected from Outfall 001 are summarized in Table 1.

The chronic toxicity of the effluent samples was determined with a 3-brood daily renewal survival and reproduction test using *C. dubia*, and a 7-day daily renewal survival and growth test using *P. promelas* using grab samples of the final effluent.

C. dubia: Statistical analysis of the test results yielded a NOEC of 100% effluent, equal to 1 TU_c, less than and in compliance with the WET limit of 1.44 TU_c.

P. promelas: The test yielded a NOEC of 100% effluent, equal to 1 TU_c, less than and in compliance with the WET limit of 1.44 TU_c.

CONCLUSION:

The chronic toxicity tests are valid and the test results acceptable.

FACILITY INFORMATION

FACILITY: Boston Water and Sewer STP

LOCATION: 1 mile SSW of the intersection of SR 522 and SR 707
Culpeper County

VPDES#: VA0065358

TYPE OF FACILITY: Municipal, minor

REGION/PERMIT WRITER: NRO / Alison Thompson

PERMIT EFFECTIVE DATE: 1 September 2003

SIC CODE/DESCRIPTION: 4952 / Sewage treatment

TREATMENT: The treatment facilities consist of: an extended aeration package plant with a coarse bar screen headworks, one aeration basin with a diffused aeration system, one ringlace tank, secondary sedimentation basin, disinfection using a liquid hypochlorite feed system, dechlorination using a sodium bisulfite tablet feed system, and a cascade step post aeration prior to discharge to outfall. The ringlace unit went online in August 1999 to enhance nitrification.

OUTFALL/FLOW (MGD): Outfall 001 / 0.015 MGD

RECEIVING STREAM/7Q10/IWC: Hazel River UT; Rappahannock River basin;
Section 4; Class III; Special Standards: q
7Q10: 0.0 MGD
IWC: 100%

TMP EFFECTIVE DATE: 31 August 1998

TMP REQUIREMENTS: Quarterly Whole Effluent Toxicity (WET) limit = 1.44 TUC (NOEC \geq 69%) based on *C. dubia* and *P. promelas*. WET limit can be replaced by pollutant specific limits should it be demonstrated that toxicity is due to specific pollutants.

TESTING PERFORMED BY: Coastal Bioanalysts, Inc.

BIOMONITORING RESULTS
BOSTON WATER AND SEWER STP (VA0065358)

Table 1
Summary of Toxicity Test Results for Outfall 001

TEST DATE	TEST TYPE/ORGANISM	48-H LC ₅₀ (%)	NOEC (%)	% SURV	IC25 (%)	TU _c	LAB	REMARKS
12/2/98	Acute <i>C. dubia</i>	>100		100			CBI	1st quarterly
12/2/98	Acute <i>P. promelas</i>	>100		100			CBI	
11/30/98	Chronic <i>C. dubia</i>		100 S 50 R	100			CBI	
11/30/98	Chronic <i>P. promelas</i>		50 S 25 G	18			CBI	
02/22/99	Acute <i>C. dubia</i>	37.5		0			CBI	2nd quarterly
02/22/99	Acute <i>P. promelas</i>	34.2		0			CBI	
02/18/99	Chronic <i>C. dubia</i>		50 S <6.25 R	0			CBI	
02/18/99	Chronic <i>P. promelas</i>		25 S 12.5 G	0			CBI	
05/31/99	Acute <i>C. dubia</i>	>100		100			CBI	3rd quarterly
05/31/99	Acute <i>P. promelas</i>	>100		100			CBI	
05/27/99	Chronic <i>C. dubia</i>		100 S 12.5 R	80			CBI	
05/27/99	Chronic <i>P. promelas</i>		100 S 50 G	95			CBI	
TRE 8/6/99								
Permit Reissued 1 September 2003								
WET = 1.44 TU _c								
10/07/03	Chronic <i>C. dubia</i>	32.8	9 S <9 R	0	5.8	>11	CBI	1st quarterly
10/07/03	Chronic <i>P. promelas</i>	82	35 SR	13	50	2.86	CBI	
12/17/03	Chronic <i>C. dubia</i>	>100	100 SR	100	>100	1	CBI	Retest
12/17/03	Chronic <i>P. promelas</i>	>100	100 SG	90	>100	1	CBI	
02/03/04	Chronic <i>C. dubia</i>	>100	69 SR	30	84.7	1.44	CBI	2nd quarterly
02/03/04	Chronic <i>P. promelas</i>	>100	100 SG	98	>100	1	CBI	
04/27/04	Chronic <i>C. dubia</i>	>100	100 SR	100	>100	1	CBI	3rd quarterly
04/27/04	Chronic <i>P. promelas</i>	>100	100 SG	95	>100	1	CBI	Invalid
07/13/04	Chronic <i>C. dubia</i>	77.7	35 S 9 R	10	13.6	11	CBI	Retest
07/13/04	Chronic <i>P. promelas</i>	76.3	35 SG	13	43.1	2.86	CBI	
08/10/04	Chronic <i>C. dubia</i>	>100	100 S 9 R	90	13.8	11	CBI	4th quarterly
08/10/04	Chronic <i>P. promelas</i>	>100	100 SG	93	>100	1	CBI	

TEST DATE	TEST TYPE/ORGANISM	48-H LC ₅₀ (%)	NOEC (%)	% SURV	IC25 (%)	TUc	LAB	REMARKS
09/21/04	Chronic <i>C. dubia</i>	>100	35 SR	60	46	2.86	CBI	5th quarterly
09/21/04	Chronic <i>P. promelas</i>	>100	100 SG	83	>100	1	CBI	
12/14/04	Chronic <i>C. dubia</i>	>100	100 SR	100	91.9	1	CBI	6th quarterly
12/14/04	Chronic <i>P. promelas</i>	>100	100 SG	95	>100	1	CBI	
01/18/05	Chronic <i>C. dubia</i>	>100	100 SR	100	>100	1	CBI	7th quarterly
01/18/05	Chronic <i>P. promelas</i>	>100	100 S 69 G	100	95.2	1.44	CBI	
04/19/05	Chronic <i>C. dubia</i>	>100	100 S 69 R	70	82.8	1.44	CBI	8th quarterly
04/19/05	Chronic <i>P. promelas</i>	>100	100 SG	98	>100	1	CBI	
08/23/05	Chronic <i>C. dubia</i>	>100	100 SR	90	>100	1	CBI	9th quarterly
08/23/05	Chronic <i>P. promelas</i>	>100	100 SG	85	>100	1	CBI	
10/18/05	Chronic <i>C. dubia</i>	>100	100 SR	90	>100	1	CBI	10th quarterly
10/18/05	Chronic <i>P. promelas</i>	>100	18 SG	80	32.3	5.56	CBI	Pathogen at work
03/07/06	Chronic <i>C. dubia</i>	>100	100 SR	100	>100	1		11 th quarterly
03/07/06	Chronic <i>P. promelas</i>	>100	100 SG	100	98	1		
05/09/06	Chronic <i>C. dubia</i>	>100	100 S 69 R	90	63	1.45		12 th quarterly
05/09/06	Chronic <i>P. promelas</i>	>100	100 SG	98	>100	1		
08/15/06	Chronic <i>C. dubia</i>	>100	100 SR	100	>100	1		13 th quarterly
08/15/06	Chronic <i>P. promelas</i>	>100	100 SG	95	>100	1		
10/24/06	Chronic <i>C. dubia</i>	>100	100 SR	90	>100	1		14 quarterly
10/24/06	Chronic <i>P. promelas</i>	>100	100 SG	95	>100	1		
03/13/07	Chronic <i>C. dubia</i>	>100	100 SR	100	>100	1	CBI	15 th quarterly
03/13/07	Chronic <i>P. promelas</i>	>100	100 SG	100	>100	1	CBI	
06/20/07	Chronic <i>C. dubia</i>	>100	100 S 35 R	100	58.4	2.86	CBI	16 th quarterly
06/20/07	Chronic <i>P. promelas</i>	>100	100 SG	90	>100	1	CBI	
09/11/07	Chronic <i>C. dubia</i>	>100	100 SR	100	>100	1	CBI	17 th quarterly
09/11/07	Chronic <i>P. promelas</i>	>100	100 SG	93	>100	1	CBI	
10/02/07	Chronic <i>C. dubia</i>	>100	100 SR	100	>100	1	CBI	18 th quarterly
10/02/07	Chronic <i>P. promelas</i>	>100	100 SG	93	>100	1	CBI	
02/19/08	Chronic <i>C. dubia</i>	>100	100 SR	100	>100	1	CBI	19 th quarterly
02/19/08	Chronic <i>P. promelas</i>	>100	100 SG	100	>100	1	CBI	
06/03/08	Chronic <i>C. dubia</i>	>100	100 SR	100	>100	1	CBI	20 th quarterly
06/03/08	Chronic <i>P. promelas</i>	>100	100 SG	95	>100	1	CBI	

FOOTNOTES:

A bold faced value for LC50 or NOEC indicates the test failed the toxicity criteria.

ABBREVIATIONS:

S - Survival; R - Reproduction; G - Growth

% SURV - Percent survival in 100% effluent

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated wastewater into a water body in Culpeper County, Virginia.

PUBLIC COMMENT PERIOD: XXX, 2008 to 5:00 p.m. on XXX, 2008

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – [Wastewater] issued by DEQ, under the authority of the State Water Control Board

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: Boston Water & Sewer, 2301 Wyoming Ave NW, Washington DC 20008, VA0065358

NAME AND ADDRESS OF FACILITY: Boston Water & Sewer STP, 1 mile SSW of intersection of Routes 522 and 707, Culpeper, VA 22701

PROJECT DESCRIPTION: NAME OF APPLICANT has applied for a reissuance of a permit for the private Boston Water & Sewer STP. The applicant proposes to release treated sewage wastewaters from residential areas at a rate of 0.015 million gallons per day into a water body. The sludge will be disposed by pump and haul to the Remington WWTP. The facility proposes to release the treated sewage in the UT to the Hazel River in Culpeper County in the Rappahannock watershed. A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: pH, BOD, E. coli, Ammonia as Nitrogen, Total Suspended Solids, Total Recoverable Copper, Total Recoverable Zinc, and Whole Effluent Toxicity.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requestor, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. DEQ may hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION: The public may review the documents at the DEQ-Northern Regional Office by appointment.

Name: Alison Thompson

Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193

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**State "Transmittal Checklist" to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review**

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name:	Boston Water & Sewer STP
NPDES Permit Number:	VA0065358
Permit Writer Name:	Alison L. Thompson
Date:	September 22, 2008

Major []**Minor [X]****Industrial []****Municipal [X]****I.A. Draft Permit Package Submittal Includes:**

	Yes	No	N/A
1. Permit Application?	X		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?	X		
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?	X		
6. A Reasonable Potential analysis showing calculated WQBELs?	X		
7. Dissolved Oxygen calculations?	X		
8. Whole Effluent Toxicity Test summary and analysis?	X		
9. Permit Rating Sheet for new or modified industrial facilities?			X

I.B. Permit/Facility Characteristics

	Yes	No	N/A
1. Is this a new, or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet or permit contain a description of the wastewater treatment process?	X		
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?		X	
5. Has there been any change in streamflow characteristics since the last permit was developed?		X	
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		X	
7. Does the fact sheet or permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?		X	
a. Has a TMDL been developed and approved by EPA for the impaired water?			X
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?			X
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?			X
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?		X	
10. Does the permit authorize discharges of storm water?		X	

I.B. Permit/Facility Characteristics – cont.	Yes	No	N/A
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?		X	
12. Are there any production-based, technology-based effluent limits in the permit?		X	
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?		X	
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?		X	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?		X	
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?	X		
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?	X		

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Checklist – for POTWs (To be completed and included in the record only for POTWs)

II.A. Permit Cover Page/Administration

	Yes	No	N/A
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements

	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether “antibacksliding” provisions were met for any limits that are less stringent than those in the previous NPDES permit?	X		

II.C. Technology-Based Effluent Limits (POTWs)

	Yes	No	N/A
1. Does the permit contain numeric limits for <u>ALL</u> of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH?	X		
2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?	X		
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?	X		
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?	X		
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits?	X		
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?		X	
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			X

II.D. Water Quality-Based Effluent Limits

	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL?		X	
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a “reasonable potential” evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the “reasonable potential” evaluation was performed in accordance with the State’s approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have “reasonable potential”?	X		
d. Does the fact sheet indicate that the “reasonable potential” and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?	X		
e. Does the permit contain numeric effluent limits for all pollutants for which “reasonable potential” was determined?	X		

II.D. Water Quality-Based Effluent Limits – cont.	Yes	No	N/A
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established?	X		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the record indicate that an “antidegradation” review was performed in accordance with the State’s approved antidegradation policy?	X		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations?	X		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	X		
3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements?		X	
4. Does the permit require testing for Whole Effluent Toxicity?	X		

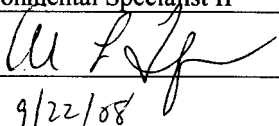
II.F. Special Conditions	Yes	No	N/A
1. Does the permit include appropriate biosolids use/disposal requirements?	X		
2. Does the permit include appropriate storm water program requirements?			X

II.F. Special Conditions – cont.	Yes	No	N/A
3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			X
4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?	X		
5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]?		X	
6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)?		X	
a. Does the permit require implementation of the “Nine Minimum Controls”?			X
b. Does the permit require development and implementation of a “Long Term Control Plan”?			X
c. Does the permit require monitoring and reporting for CSO events?			X
7. Does the permit include appropriate Pretreatment Program requirements?			X

II.G. Standard Conditions		Yes	No	N/A
1. Does the permit contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?		X		
List of Standard Conditions – 40 CFR 122.41				
Duty to comply	Property rights	Reporting Requirements		
Duty to reapply	Duty to provide information	Planned change		
Need to halt or reduce activity	Inspections and entry	Anticipated noncompliance		
not a defense	Monitoring and records	Transfers		
Duty to mitigate	Signatory requirement	Monitoring reports		
Proper O & M	Bypass	Compliance schedules		
Permit actions	Upset	24-Hour reporting		
		Other non-compliance		
2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]?		X		

Part III. Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	<u>Alison L. Thompson</u>
Title	<u>Environmental Specialist II</u>
Signature	<u></u>
Date	<u>9/22/08</u>